

REMARKS/ARGUMENTS

In the Office Action mailed September 24, 2008 (hereinafter, "Office Action"), claims 20, 22-24, 25, 27-29 and 39-40 stand rejected under 35 U.S.C. § 101. Claims 1, 3-5, 20, 22-34, 39 and 41 stand rejected under 35 U.S.C. § 102. Claims 6, 8-10, 25, 27-29 and 40 stand rejected under 35 U.S.C. § 103. Claims 1, 3-4, 6, 20, 22, 25 and 39-41 have been amended. Claim 42 has been added.

Applicants respectfully respond to the Office Action.

I. Claims 20, 22-24, 25, 27-29 and 39-40 Rejected Under 35 U.S.C. § 101

Claims 20, 22-24, 25, 27-29 and 39-40 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

Each of the claims at issue (independent claims 20, 25, and 39 and dependent claims 22-24, 27-29, and 40) comprise statutory subject matter under Section 101. Each of these claims explicitly requires an "apparatus." Section 101 provides, "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." An apparatus clearly falls within the scope of a "machine," as defined Section 101. (See, e.g., In re Bilski, Case No. 2007-1130 (Federal Circuit October 30, 2008) ("A claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.")) Here, the claims at issue are clearly tied to a particular machine or apparatus and, in fact, are expressly directed to and "apparatus."

Further, the Patent Office's Interim Guidelines for Examination of Patent Application for Patent Subject Matter Eligibility" of October 26, 2006 (hereinafter, the "Guidelines") (accessible at http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/guidelines101_20051026.pdf) show that the claims at issue encompass patentable subject matter. The guidelines provide:

The principal objective of these guidelines is to assist examiners in determining, on a case-by-case basis, whether a claimed invention falls within a judicial exception to statutory subject matter (i.e., is nothing more than an abstract idea, law of nature, or natural phenomenon), or whether it is a practical application of a judicial exception to statutory subject matter. The guidelines explain that a practical application of a 35 U.S.C. § 101 judicial exception is claimed if the claimed invention physically transforms an article or physical object

to a different state or thing, or if the claimed invention otherwise produces a useful, concrete, and tangible result.

(Guidelines at p. 1-2; emphasis added.)

The claimed subject matter at issue is clearly not merely an “abstract idea, law of nature, or natural phenomenon.” It transforms an article or physical object (an “apparatus”) to a “different state” and produces a “useful, concrete, and tangible result.” The claimed invention encompasses “apparatus[es] for scrambling [or unscrambling] information bits in a communications system.” The claimed apparatuses are clearly transformed into a “different state” comprising scrambled or unscrambled bits utilizing the “means for the scrambling information bits of the control message with the determined scrambling sequence in accordance with the metric,” “means for unscrambling the information bits of the control message transmitted on the control channel with the determined unscrambling sequence in accordance with the metric,” or “a scrambler for scrambling the information bits of the control message with the determined scrambling sequence in accordance with the interval of the channel.” (*See, e.g.*, Guidelines at p. 19 (“The examiner first shall review the claim and determine if it provides a transformation or reduction of an article to a different state or thing. If the examiner finds such a transformation or reduction, the examiner shall end the inquiry and find that the claim meets the statutory requirement of 35 U.S.C. § 101.”) and M.P.E.P. § 2106))

The Guidelines at pp. 4, 20-21 further provide:

The claimed invention as a whole must be useful and accomplish a practical application. That is, it must produce a “useful, concrete and tangible result.” State Street, 149 F.3d at 1373-74, 47 USPQ2d at 1601-02. The purpose of this requirement is to limit patent protection to inventions that possess a certain level of “real world” value, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research (Brenner v. Manson, 383 U.S. 519, 528-36, 148 USPQ 689, 693-96 (1966)); In re Fisher, 421 F.3d 1365, 76 USPQ2d 1225 (Fed. Cir. 2005); In re Ziegler, 992 F.2d 1197, 1200-03, 26 USPQ2d 1600, 1603-06 (Fed. Cir. 1993)).

* * * *

For eligibility analysis, physical transformation “is not an invariable requirement, but merely one example of how a mathematical algorithm [or law of nature] may bring about a useful application.” AT&T, 172 F.3d at 1358-59, 50 USPQ2d at 1452. If the examiner determines that the claim does not entail the transformation of an article, then the examiner shall review the claim to determine

if the claim provides a practical application that produces a useful, tangible and concrete result.

* * * *

The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible requirement does require that the claim must recite more than a § 101 judicial exception, in that the process claim must set forth a practical application of that § 101 judicial exception to produce a real-world result. Benson, 409 U.S. at 71-72, 175 USPQ at 676-77 (invention ineligible because had “no substantial practical application.”). “[A]n application of a law of nature or mathematical formula to a ... process may well be deserving of patent protection.” Diehr, 450 U.S. at 187, 209 USPQ at 8 (emphasis added); see also Corning, 56 U.S. (15 How.) at 268, 14 L.Ed. 683 (“It is for the discovery or invention of some practical method or means of producing a beneficial result or effect, that a patent is granted . . .”). In other words, the opposite meaning of “tangible” is “abstract.”

(See also M.P.E.P. § 2106.)

The claimed subject matter at issue is clearly more than a mathematical concept or abstract idea. It involves an apparatus for scrambling or unscrambling information bits for the purpose of, for example, avoiding or mitigating the “occurrence of repetitive incorrect determination of control message content.” (Pending application at paragraph [1042].) Further, these claims are distinguishable from In re Nuijten (Federal Circuit September 20, 2007), which found claims to a “signal” not to comprise “patentable subject matter” but noted that “Nuijten’s Claims 11-13, also allowed by the PTO, are directed to ‘[a]n arrangement for embedding supplemental data in a signal,’ including ‘encoder means for encoding the signal’ and other structural features that carry out the above process. . . . Thus, Nuijten has been allowed claims to the process he invented, a device that performs that process, and a storage medium holding the resulting signals. None of these claims is before us on appeal.”) The claims at issue are directed to patentable subject matter related an apparatus.

Thus, Applicants respectfully submit that the apparatus claims 20, 22-24, 25, 27-29 and 39-40 constitute patentable subject matter and that the Office Action has not established a prima facie case that these claims do not encompass patentable subject matter. Applicants thus respectfully request withdrawal of this rejection.

II. Claims 1, 3-5, 20, 22-34, 39 and 41 Rejected Under 35 U.S.C. § 102(b)

Claims 1, 3-5, 20, 22-34, 39 and 41 stand rejected under 35 U.S.C. § 102(b) as being anticipated by International Patent Application Publication No. WO 97/12461 to Bodin (hereinafter, "Bodin"). This rejection is respectfully traversed.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." MPEP § 2131 (citing Verdegaal Bros. v. Union Oil Co. of California, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)). "The identical invention must be shown in as complete detail as is contained in the ... claim." Id. (citing Richardson v. Suzuki Motor Co., 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)). In addition, "the reference must be enabling and describe the applicant's claimed invention sufficiently to have placed it in possession of a person of ordinary skill in the field of the invention." In re Paulsen, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994).

Claim 1, as amended, provides:

1. A method for scrambling information bits in a communications system, comprising:
 - determining a scrambling sequence based on a metric of system time, wherein said determining a scrambling sequence includes determining the metric based on a subinterval of a system time interval of a control channel in which the information bits of a control message are to be transmitted; and
 - scrambling the information bits of the control message with the determined scrambling sequence in accordance with the metric.

Support for the amendments to this claim are found, for example, at paragraphs [1040] and [1046] and Figures 4 and 7 of the pending application.

It should be noted that the pending application distinguishes data channels (e.g., F-PDCH – Forward Packet Data Channels) and control channels (e.g., F-PDCCH – Forward Packet Data Control Channels). (*See, e.g.*, Figure 1 and paragraphs [1009] and [1010].) As explained in the specification, the claimed subject matter addresses problems related to "repetitive false-alarm events" for control message content:

[1015] The above-described procedure may yield an incorrect determination of control message slot format. For example, assume that a control message is a two-slot message. Given the above described procedure, the mobile station performs the inverse of the F-PDCCH processing under an assumption that the control message is transmitted in a one-slot format, and interprets the first 21 bits of the decoded output as message content 202 (of FIG. 2), and the remaining 8 bits as a quality indicator 204 (of FIG. 2). Unfortunately, the content of certain control

messages sometimes results in control messages that appear to be valid in a sense that, the computed CRC is equal to the interpreted CRC. Consequently, the mobile station declares a valid control message, and a false-alarm event occurs.

[1016] Because the same control message contents transmitted on the F-PDCCH are repeated from time to time, there is likelihood that the information bits comprising the message will cause repetitive false-alarm events. Therefore, there is a need in the art for an apparatus preventing such repetitive incorrect determination of control message content to happen.

(Pending application at paragraphs [1015]-[1017].) Claim 1 requires “determining a scrambling sequence based on a metric of system time” for “a control channel in which the information bits of a control message are to be transmitted; and scrambling the information bits of the control message.” The specification states:

As described above, the purpose of scrambling the input data 402 [content of the control message] should prevent occurrence of repetitive incorrect determination of control message content. Because the content of the control message can be repetitive, so can be the content of the input data 402. Consequently, to prevent occurrence of repetitive incorrect determination of control message content, the scrambling sequence must be time varying. Consequently, in the illustrated embodiment, block 420 provides a metric of a system time. System time is a reference time that base stations and mobile stations both refer to so that they can keep synchronized in time.

(Pending application at paragraphs [1041]-[1042].)

Bodin does not disclose or suggest “determining a scrambling sequence based on a metric of system time” for “a control channel in which the information bits of a control message are to be transmitted; and scrambling the information bits of the control message,” as required by claim 1. Instead, Bodin expressly states that it relates “to various methods of increasing information flow (speech or data) which is to be transmitted in a mobile radio system.” (Bodin, Abstract.) Bodin does not disclose or suggest scrambling of a “control message” which is to be transmitted on a “control channel.” Thus, Bodin does not address the issue of “repetitive false-alarm events” for control messages, as addressed by the claimed subject matter.

Applicants thus respectfully submit that Bodin does not disclose all the elements “arranged or combined in the same way as in” claim 1, as required by Section 102. (*Net MoneyIN, Inc. v. Versign, Inc. et al.* (Case No. 07-1565) (Fed. Cir. Oct. 20, 2008) (“We thus hold that unless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as

recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102.”)

Further, the cited reference does not disclose “determining a scrambling sequence based on a metric of system time.” Instead, Bodin teaches methods for encrypting for purposes of authorization checks in a radio system where two or more time slots are used for the same transmission (See page 3, lines 1-6). The encryption of Bodin does not teach “determining a scrambling sequence based on a metric of system time.” As noted previously, the system time comprises “a reference time that base stations and mobile stations both refer to so that they can keep synchronized in time.” (Pending application at [1042].) In particular, Bodin teaches encryption of two sub-blocks of information B1, B2 with a pseudo-random sequence PS with EXOR operations (See page 6, lines 1-4). No “scrambling sequence” determined based on system time or a metric of system time is taught or even suggested by Bodin. Instead, “various parameters (Kc [encryption key], FN [ordinal frame number], PS [encryption sequence]) used in the encryption process are modified in dependence on the ordinal number [TSn] of each of the used time slots in the frame.” (Bodin, Abstract and page 7, lines 5-30.) Simply teaching modification of various parameters by the ordinal number of used time slots in each frame does not teach or suggest “determining a scrambling sequence based on a metric of system time,” as used in the present application. Bodin also does not teach that the ordinal frame number FN is based on “a metric of system time,” as required by claim 1. In fact, the term “ordinal” relates to order within a sequence rather than being based on “system time.” Thus, the ordinal number of a frame or a time slot within a frame merely relates to relative order within a sequence rather than being based on system time.

Moreover, because Bodin does not teach “determining a scrambling sequence based on a metric of system time,” it is clear that Bodin also fails to teach or suggest determination of such a metric “based on a subinterval of a system time interval.” As discussed above, neither the ordinal frame number FN nor the ordinal numbers TSn of time slots in a frame are disclosed as being based on system time. Thus, the subject matter “based on a subinterval of a system time interval” of claim 1 is not taught or suggested by Bodin.

The present disclosure teaches that the “metric of system time” can be expressed in units or index of slots that are tied to system time as explained in paragraph [1043] of the present

disclosure, as one example. Again, Bodin's teaching of ordinal or positional references does not teach or suggest that the PS sequence determination is based a system time.

In view of the foregoing, Applicants respectfully submit that claim 1 is patentably distinct from Bodin. Accordingly, Applicants respectfully request that the rejection of claim 1 be withdrawn.

Claims 3-5 depend directly from claim 1. Accordingly, Applicants respectfully request that the rejection of claims 3-5 be withdrawn.

Claims 20, 25, 39 and 41 have been amended to include subject matter similar to the subject matter of claim 1. Accordingly, Applicants respectfully request that the rejection of claims 20, 25, 39 and 41 be withdrawn for at least the same reasons as those presented above in connection with claim 1.

Claims 22-24 depend directly from claim 20. Claims 27-29 depend directly from claim 25. Accordingly, Applicants respectfully request that the rejection of claims 22-24 and 27-29 be withdrawn for at least the reasons provided above.

III. Claims 6, 8-10, 25, 27-29 and 40 Rejected Under 35 U.S.C. § 103(a)

Claims 6, 8-10, 25, 27-29 and 40 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over European Patent Application Publication No. EP 0 446 194 A1 to Dent (hereinafter, "Dent") in view of Bodin. This rejection is respectfully traversed.

The factual inquiries that are relevant in the determination of obviousness are determining the scope and contents of the prior art, ascertaining the differences between the prior art and the claims in issue, resolving the level of ordinary skill in the art, and evaluating evidence of secondary consideration. KSR Int'l Co. v. Teleflex Inc., 550 U.S. ___, 2007 U.S. LEXIS 4745, at **4-5 (2007) (citing Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 17-18 (1966)). As the Board of Patent Appeals and Interferences has recently confirmed, "obviousness requires a suggestion of all limitations in a claim." In re Wada and Murphy, Appeal 2007-3733 (citing CFMT, Inc. v. Yieldup Intern. Corp., 349 F.3d 1333, 1342 (Fed. Cir. 2003)). Moreover, the analysis in support of an obviousness rejection "should be made explicit." KSR, 2007 U.S. LEXIS 4745, at **37. "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational

underpinning to support the legal conclusion of obviousness.” Id. (citing In re Kahn, 441 F.3d 977, 988 (Fed. Cir. 2006)).

Applicants respectfully submit that the claims at issue are patentably distinct from the cited references. The cited references do not teach or suggest all of the subject matter in these claims.

Claim 6, as amended, requires:

6. . . A method for unscrambling information bits in a communications system, comprising:

determining an unscrambling sequence based on a metric of system time, wherein said determining an unscrambling sequence includes determining the metric based on a first subinterval of a system time interval of a control channel preceding a second subinterval of the system time interval by a pre-determined number of subintervals, the second subinterval including information bits of a control message transmitted on the control channel to be unscrambled; and

unscrambling the information bits of the control message transmitted on the control channel with the determined unscrambling sequence in accordance with the metric.

Support for the amendments to this claim are found, for example, at paragraphs [1040] and [1046] to [1050] and Figures 4 and 7 of the pending application.

Neither Dent nor Bodin teach or suggest “unscrambling the information bits of the control message transmitted on the control channel with the determined unscrambling sequence in accordance with the metric,” as required by claim 6. As explained above, Bodin states that it relates “to various methods of increasing information flow (speech or data) which is to be transmitted in a mobile radio system,” and does not disclose or suggest “unscrambling the information bits of the control message transmitted on the control channel.” (Bodin, Abstract.) Further, as explained above, Bodin does not teach or suggest “determining an unscrambling sequence based on a metric of system time” or “determining the metric based on a first subinterval of a system time interval.”

As noted in the Office Action, Dent does not expressly mention a “metric of system time.” (Office Action at p. 6.) Instead, Dent relates to “synchronization of encryption devices in digital cellular communication systems.” (Dent, Abstract.) To do so, the system disclosed in Dent provides for “continuous or carrier frequent updates of the transmit counter value which may be used to reset the receiver counter and to resynchronize the system without the necessity

of reinitialization and repetition of the intervening clock pulses.” (*Id.*) Applicants could not identify any portion of Dent that teaches or suggests “determining an unscrambling sequence based on a metric of system time” and “unscrambling the information bits of [a] control message transmitted on the control channel with the determined unscrambling sequence in accordance with the metric.” Applicants thus submit that claim 6 is patentable over the cited references.

Claims 8-10 depend directly from claim 6 and thus are allowable at least for the reasons provided above.

Claims 25 and 40 have been amended to include subject matter similar to the subject matter of claim 6. Accordingly, Applicants respectfully request that the rejection of claims 25 and 40 be withdrawn for at least the same reasons as those presented above in connection with claim 6.

Claims 27-29 depend directly from claim 25. Accordingly, Applicants respectfully request that the rejection of claims 27-29 be withdrawn.

IV. New Claim

Claim 42 has been added. Support for this claim is provided, for example, at paragraphs [1046] to [1057] of the pending application. Claim 42 contains subject matter similar to claim 6 and is thus allowable at least for the reasons provided above in connection with claim 6.

Application No. 10/085,581
Amendment dated January 21, 2009
Reply to Office Action of September 24, 2008

CONCLUSION

In view of the foregoing, Applicants respectfully submit that all pending claims in the present application are in a condition for allowance, which is earnestly solicited. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026.

Dated: _____

1/21/09

Respectfully submitted,

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